IN THE CLAIMS:

Please cancel claims 1-25 without prejudice or disclaimer, and substitute new claims 26-50 therefor as follows:

Claims 1-25 (Cancelled).

26. (New) A low loss micro-ring resonator device comprising

a closed-loop resonator waveguide having a first refractive index, said resonator waveguide defining an inner and an outer region by an outer curved edge of said waveguide, said resonator waveguide being arranged on a substrate having a second refractive index, the refractive index difference between said first refractive index and said second refractive index being greater than 0.3;

an upper cladding covering said inner region of said resonator waveguide having a third refractive index; and

a lateral cladding in contact with said outer curved edge and extending in said outer region, said lateral cladding having a fourth refractive index, said fourth refractive index being lower than said third refractive index.

27. (New) The resonator device according to claim 26, wherein said upper cladding comprises a tunable material.

28. (New) The resonator device according to claim 26, wherein at least one of the dimensions of the cross-section of said closed-loop resonator waveguide is of the order of $\frac{\lambda}{n_{eff}}$, wherein n_{eff} is the effective index of the resonator waveguide and λ is the wavelength of a propagating mode in the resonator waveguide.

29. (New) The resonator device according to claim 26, comprising a first waveguide being in substantially close proximity to said resonator waveguide in a predetermined region to provide coupling there-between.

30. (New) The resonator device according to claim 26, wherein said resonator waveguide is a single mode waveguide.

31. (New) The resonator device according to claim 26, wherein said resonator waveguide comprises silicon compound materials.

32. (New) The resonator device according to claim 26, wherein said substrate comprises silicon compound materials.

33. (New) The resonator device according to claim 29, comprising a second waveguide, said first waveguide being adapted for carrying an input signal having at least a channel of a given wavelength, and said resonator waveguide being operable so that said given wavelength is transferred to said second waveguide.

34. (New) The resonator device according to claim 33, wherein said input signal comprises a given number of optical channels having wavelengths of about 1530 to about 1565 nm.

35. (New) The resonator device according to claim 26, wherein the radius of the closed-loop resonator waveguide is 5 to 10 μm.

36. (New) The resonator device according to claim 35, wherein the radius of the closed-loop resonator waveguide is not larger than 8 μm.

37. (New) The resonator device according to claim 26, wherein the closed-loop resonator waveguide is a ring.

38. (New) The resonator device according to claim 33, wherein said resonator waveguide and said waveguides are arranged in a lateral coupling configuration.

39. (New) The resonator device according to claim 33, wherein said resonator waveguide and said waveguides are arranged in a vertical coupling configuration.

40. (New) The resonator device according to claim 27, wherein the third refractive index of said tunable material can be varied upon variation of an external parameter.

41. (New) The resonator device according to claim 27, wherein the tunable material is variable with temperature and said tunable material has a ratio $|\frac{\Delta n}{n}|$ between the variation Δn of the third refractive index and the refractive index of said tunable material not smaller than 10^{-2} for a temperature variation not larger than 100°C.

42. (New) The resonator device according to claim 27, wherein the tunable material is variable with an electric field and said tunable material has a ratio $|\frac{\Delta n}{n}|$ between the variation Δn of the refractive index and the refractive index of said tunable material not smaller than 10^{-2} for an electric field variation not larger than 5 V/μm.

43. (New) The resonator device according to claim 27, wherein the refractive index of said tunable material is variable with temperature and said tunable material has a thermo-optic coefficient $\left|\frac{dn}{dT}\right|$ greater than or equal to 10^{-4}/°C.

44. (New) The resonator device according to claim 27, wherein said tunable material variable with temperature is a polymer.

45. (New) The resonator device according to claim 27, wherein said tunable material is a liquid crystal.

46. (New) The resonator device according to claim 26, wherein said lateral cladding comprises a tunable material.

47. (New) An add/drop optical device comprising one of more of the resonator devices according to claim 26.

48. (New) A method to reduce the propagation losses of a resonator device, comprising the steps of:

realizing a closed loop resonator waveguide having a first refractive index on a substrate having a second refractive index, the refractive index difference between said first refractive index and said second refractive index being greater than 0.3, said resonator waveguide defining an inner and an outer region by an outer curved edge of said waveguide; and

adding an upper layer in said inner region having a third refractive index greater than a fourth refractive index of a lateral cladding in contact with said outer curved edge of said resonator waveguide and extending in said outer region.

49. (New) The method according to claim 48, comprising the step of forming said lateral cladding by depositing a layer of material on said outer region.

50. (New) The method according to claim 48, wherein said upper layer is formed from a tunable material.